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L3	wheel near (speed or velocity)	23264	L3
L2	transmission near (output or rpm or revolution)	24286	L2
L1	driv$3 near wheel	109112	L1

END OF SEARCH HISTORY

L5: Entry 9 of 49 File: USPT Feb 27, 2001

DOCUMENT-IDENTIFIER: US 6193628 B1
TITLE: Vehicle shift quality using a supplemental torque source

Detailed Description Text (5):
A transmission output speed (TOS) sensor 42 senses the speed at the output of the transmission (i.e., at the driven ends of half-shafts 34 and 36. Further, wheel speed (WS) sensors 44 and 46 sense the wheel speeds of driven wheels 38 and 40. Additionally, an engine speed sensor 48 senses the rotational speed of engine 20. The signals of each of the above sensors are made available to control module 26, either by hard-wiring or through a data communication link from other module(s) to which the sensors are directly coupled.

Detailed Description Text (6):
In a first variation of the present invention, starter-alternator 24 is controlled to provide a countertorque which is based on the "wind-up" speed of a half-shaft 34 or 36. The "wind-up" speed is the difference between the speed at the driven end of the half-shaft and the end coupled to the drive wheel. Refer additionally to FIG. 3. In this variation of the present invention, the countertorque T.sub.SA commanded by control module 26 is a proportional function of the difference between the transmission output speed and a wheel speed. FIG. 3 shows this relationship in block diagram form. As an example of the performance with the gain K of FIG. 3 selected as 50 Nms/radian, refer to FIG. 4. The "undamped" curve shows the wheel torque without any damping provided by starter-alternator 24. The "damped" curve shows the wheel torque with damping provided by starter-alternator 24. Clearly, the damping provided by starter-alternator 24 almost completely eliminates the oscillations present in the undamped case. If appropriate in a given case, the proportional control applied can be combined with integral and/or derivative control, or other known control methodologies can be employed. Also, the countertorque T.sub.SA can be a function of a difference between the transmission output speed and the average of the speeds of the driven wheels of the vehicle.

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L5: Entry 15 of 49 File: USPT Jun 13, 2000

DOCUMENT-IDENTIFIER: US 6073740 A
TITLE: Process for tuning the switching state of a torque converter lock-up clutch in an automatic gear box

Abstract Text (1):
A process for tuning the switching state of a torque converter lock-up clutch (WK) in an automatic transmission to the output speed of rotation (n.sub.-- ab) of the transmission output shaft or the wheel speeds of rotation (n.sub.-- wheel) of driving wheels of a vehicle by means of an electronic transmission controller (EGS) with computer unit and an electronic pressure regulator (EDS) includes the following steps:

Abstract Text (2):
a) from the wheel speeds of rotation (n.sub.-- wheel) measured by a measurement device (1) on the driving wheels, or the output speed of rotation (n.sub.-- ab) of the transmission output shaft, a time-related gradient of speed of rotation (dn/dt) is detected during activated state of the torque converter lock-up clutch by the computer unit in a processing function (S3);

Drawing Description Text (3):
FIG. 1 is a flow chart of a process for tuning the switching state of a torque converter lock-up clutch to the output speed of rotation of the transmission output shaft or the wheel speeds of rotation of the driving wheels of a vehicle;

Drawing Description Text (4):
FIG. 2 is a flow chart of one other process for tuning the switching state of a torque converter lock-up clutch to the output speed of rotation of the transmission output shaft or the wheel speeds of rotation of driving wheels of a vehicle; and

Detailed Description Text (2):
Referring to FIG. 1, a process sequence plan is shown for a sub-program for tuning the switching state of a torque converter lock-up clutch (WK) in an automatic transmission to the output speed of rotation n.sub.-- ab of the transmission output shaft or the wheel speeds of rotation n.sub.-- wheel of the driving wheels of a vehicle.

Detailed Description Text (4):
At the beginning, in a first discriminating function S1, checked is whether the torque converter lock-up clutch is activated. Should this not be the case, the program branches off for return to a main program in a processing function S2. But if the torque converter lock-up clutch is activated, the discriminating function S1 activates a processing function S3 which determines a time-related gradient of the speed of rotation (dn/dt) from speeds which are given by a measurement device 1 to the processing function S3. The speeds of rotation can be either the wheel speeds of rotation n.sub.-- wheel measured on driving wheels (not shown) of a vehicle, or alternatively the output speed of rotation n.sub.-- ab of the transmission output shaft also (not shown). The gradient of the speed of rotation (dn/dt) is slidingly found, that is, it constitutes a medium value from an actual computer gradient of the speed of rotation and one or more gradients of the speed of rotation determined at very short intervals. The gradient of the speed of rotation thus determined, which is the differential quotient according to the function (n.sub.-- ab(t2)-n.sub.-- ab(t1))/(t2-t1) involving the output speeds of rotation (n.sub.-- ab), and since computed by the computer unit of the electronic transmission controller, constitutes a

reliable value.

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L5: Entry 3 of 49 File: USPT Jan 7, 2003

DOCUMENT-IDENTIFIER: US 6505139 B1
TITLE: Speed ratio control device for vehicle

Detailed Description Text (25):
The controller 61 comprises a microprocessor, read only memory, random access memory and input/output interface, and the following signals are input to the controller 61 as shown in FIG. 2. driven wheel speed signal from a driven wheel speed sensor 58 acceleration signal from an acceleration sensor 59 throttle opening signal TVO from a throttle opening sensor 62 sensor detected vehicle speed signal VSPSEN from a vehicle speed sensor 63 transmission input rotation speed signal Ni (or engine rotation speed signal Ne) from an input rotation sensor 64 transmission output rotation speed signal No from an output rotation sensor 65 transmission oil temperature signal TMP from an oil temperature sensor 66 line pressure signal PL from a line pressure sensor 67 engine rotation speed signal Ne from an engine rotation speed sensor 68 shift lever position signal from an inhibitor switch 60 up-shift signal and down-shift signal from a manual shift switch 69 selected mode signal from a mode selection switch 70 torque-down signal from an engine controller 310 signal showing an operating state of an anti-lock brake system (ABS) 320 from the anti-lock brake system 320 signal showing an operating state of a traction control system (TCS) 330 from the traction control system 330. auto-cruise signal from a cruise control system 340

L5: Entry 12 of 49 File: USPT Sep 26, 2000

DOCUMENT-IDENTIFIER: US 6123164 A
TITLE: Method and system for coordinated engine and transmission control during traction control intervention

Detailed Description Text (9):
To avoid such unnecessary shifting, which can be detrimental to drivetrain/transmission durability as well as vehicle stability/performance on slippery surfaces such as ice or snow, the method and system of the present invention use true vehicle speed for shift scheduling rather than the driven wheel speed average or transmission output speed, which is described in greater detail below. The true vehicle speed may be provided as an average of the non-driven wheel speeds in the

Detailed Description Text (17):
More specifically, referring now to FIG. 2, automatic transmission gear shifting is illustrated in relation to throttle angle position (TAP) and transmission output speed (N.sub.out) (in RPMs) . As seen therein, shift curve (20) shows the TAP (22) or N.sub.out (24) at which a shift will be commanded between a lower gear (A) and a higher gear (B) for a given N.sub.out (24) or TAP (22), respectively. It should be noted that shift curve (20) is exemplary only, and may differ from vehicle to vehicle. It should also be noted that the above discussion concerning shift scheduling as a function of throttle angle position versus vehicle speed would result in a similar curve to that depicted in FIG. 2, where transmission output speed N.sub.out would be replaced by vehicle speed as represented by the driven wheel speed average.

Detailed Description Text (30):
However, if the vehicle is operating in a traction control mode, "when-to-shift" alterations are made (34) to the transmission control strategy. More specifically, the shift schedule of the transmission is first altered. As previously described, such an alteration of the shift schedule may include delaying a requested upshift until after driven wheel spin is first exhibited during traction control, or commanding an upshift after driven wheel spin is first exhibited during traction control. In either case, upshift is delayed or introduced after such wheel spin has been contained. In that regard, as also previously described, such alteration of the shift schedule is based on a number of inputs such as transmission output speed (N.sub.out) (36), throttle angle position (TAP) (38), and wheel speed (not specifically shown).

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L5: Entry 28 of 49 File: USPT Oct 8, 1996

DOCUMENT-IDENTIFIER: US 5562569 A
TITLE: Method of gear detection for controlling drive torque

Detailed Description Text (2):
FIG. 1 is a block circuit diagram, wherein a drive unit 101 (engine) transmits an engine speed Nmot and an engine torque Mmot to the converter unit 102. The transmission input rotational speed NE and the transmission input torque ME are applied to the transmission 103 from the output of the converter unit 102. The transmission output rotational speed Nab or the transmission output torque Mab which drives the drive wheels of the vehicle 104 will be seen at the output of the transmission 103. The sensors 11 and 12 detect, on the one hand, the engine speed Nmot or the mean wheel velocity Vrad. These two variables are fed to the evaluation unit 13. The mode of operation of the evaluation unit 13 will be described with reference to FIG. 4. The signal Gi lies at the output of the evaluation unit 13 and represents the step-up of the transmission 103 actually set. If the engine speed Nmot and the mean wheel velocity Vrad are fed to a second evaluation unit 14 in addition to the signal Gi, the signal V.sub.W representing the instantaneous torque amplification of the converter lies at the output and is fed to the ASR control 15. The mode of operation of the second evaluation unit 14 will be seen from FIG. 5.

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L18: Entry 16 of 35 File: USPT Mar 20, 2001

DOCUMENT-IDENTIFIER: US 6205386 B1
TITLE: Method and arrangement for automatically determining the differential gear ratio

Brief Summary Text (4):
From the state of the art, it is known to control (open loop and/or closed loop) the transmission functions via an electronic control apparatus. In this connection, reference can be made, for example, to the publication "Bosch Automotive Handbook", 3rd edition, pages 548 to 551. A differential transmission (axle differential) is arranged between the transmission and the driven wheels and has a specific rpm ratio. The transmission ratio of the axle differential transmission is a quantity which is used in an electronic transmission control in order, for example, to determine the transmission output rpm from the wheel rpms when a transmission output rpm sensor is defective.

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L12: Entry 2 of 19 File: USPT Oct 22, 2002

DOCUMENT-IDENTIFIER: US 6470253 B1
TITLE: Vehicle with memory for storing paired values, consisting of first data and the run distance

Detailed Description Text (5):
The motor vehicle 1 with the transmission 4 includes a gearshift lever 30. A gear recognition sensor 31 and/or a shift intention sensor 32 is arranged on the gear shift lever, or on the transmission, and it detects manual actuation of the gear shift lever and thus recognizes a shift intention of the driver based on the movement of the shift lever and/or based on the applied force. Furthermore, the vehicle is equipped with a rotational speed sensor 33, which detects the rotational speed of the transmission output shaft or of the drive wheels, respectively. Furthermore, a throttle valve sensor 34 is incorporated, which detects the throttle valve position, as well as a rotational speed sensor 35, which detects the engine rotational speed.

Detailed Description Text (19):
The transmission output shaft speed or the drive wheel speed is numerically dependent upon the transmission input speed through the gear ratio, so that based on information about the gear ratios or the transmission output shaft speed, the transmission input speed can be determined. The clutch slippage can thus be calculated from the related data.

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L5: Entry 19 of 51 File: USPT Aug 24, 1999

DOCUMENT-IDENTIFIER: US 5941923 A
TITLE: Method of and apparatus for regulating the transmission of torque

Brief Summary Text (20):
Another feature of the instant invention resides in the provision of a method of regulating the operation of an adjustable torque transmission system in a power train of a motor vehicle which is accelerable from zero speed and wherein the power train further includes a prime mover (such as a combustion engine) upstream and a variable-ratio transmission downstream of the torque transmission system. The vehicle further comprises a device for adjusting the torque transmission system so as to vary the torque which is being transmitted by the system, a central signal processing and transmitting control unit for the adjusting device, and electronic units arranged to transmit to the control unit signals which enable the control unit to determine--within at least one region of the torque transmission system--at least one of an energy input and a temperature. This method comprises the steps of accelerating the vehicle from the zero speed; and adjusting the transmission of torque by the torque transmission system during acceleration of the vehicle from zero speed so that, at first, the transmissible torque at least approximates zero until the variable RPM of the prime mover at least reaches (i.e., reaches or at least slightly exceeds) a threshold value, and that the vehicle undergoes a first acceleration at least when the RPM of the prime mover reaches the threshold value, with attendant variation of the transmissible torque to reduce the RPM of the prime mover, to achieve a more pronounced acceleration of the vehicle, and to reduce the energy input at least within a portion of the torque transmission system.

Brief Summary Text (21):
The electronic unit or units can include one or more sensors which transmit signals denoting the RPM of the prime mover and/or one or more sensors capable of transmitting signals denoting the input RPM and/or the output RPM of the transmission. Furthermore, the electronic unit or units can include one or more sensors constructed and/or positioned to transmit signals denoting the position of the throttle valve in the motor vehicle, the quantity of injected fuel, the pressure in the suction intake manifold, the RPM of the wheels and/or other parameters. In fact, the electronic unit or units can comprise two or more tachometers or tachometer generators. Still further, such unit or units can comprise the control system of an ABS system and/or an arrangement which prevents slip between the relatively rotatable parts of the torque transmission system, the electronic curcuit of the prime mover and/or other signal transmitting arrangements.

Brief Summary Text (26):
The method can comprise the additional step of effecting an increase of the RPM of a variable-RPM prime mover (such as an internal combustion engine) in the power train of the vehicle at least close to a predetermined RPM during the first stage of acceleration of the vehicle.

Brief Summary Text (53):
The method can also comprise the step of ascertaining or calculating the energy input and/or the temperature of at least one portion of the torque transmission system as a function of at least one of a plurality of signals denoting the variable RPM of the prime mover in the power train of the vehicle, a variable angle of the throttle valve of the motor vehicle, the negative pressure in the suction intake manifold of the vehicle, the input RPM of the transmission in the power train,

branching(s) of one or more auxiliary consumers in the vehicle, at least one tachometer generator of the vehicle, the position of an actuating member (such as a fork or a bearing) for a clutch of the torque transmission system, the output RPM of the transmission, the input RPM of the torque transmission system, one or more temperature sensors, the torque which is being applied to the torque transmission system and the torque which is being transmitted by the torque transmission system.

Detailed Description Text (4):
The illustrated transmission 4 is a manual transmission and can be of any known design having a variable-RPM input and a variable-RPM output. However, the friction clutch 3 and the novel regulating apparatus therefor can also be utilized (with equal or similar advantage) in power trains which employ automatic transmissions; the torque transmission system of a power train which employs an automatic transmission can constitute a starter clutch, a torque converter with a bypass or lock-up clutch, or a clutch downstream of the automatic transmission.

CLAIMS:

2. A method of regulating the operation of an engageable and disengageable torque transmission system in a motor vehicle which is accelerable from zero speed, comprising the steps of

accelerating the vehicle in at least two stages; and

adjusting the transmission of torque by said system within said at least two stages in dependency upon at least one of (a) at least one of a plurality of preselectable values including an RPM of a variable-RPM prime mover in a power train of the vehicle, a variable input RPM of a variable drive ratio transmission in the power train, and time, and (b) at least one function of at least one of said preselectable values to thus achieve a planned acceleration of the vehicle.

5. The method of claim 2, wherein said stages include a first stage and further comprising the step of effecting an increase of the RPM of the variable-RPM prime mover of the vehicle at least close to a predetermined RPM during said first stage.

12. The method of claim 2, wherein said stages include a first stage and a second stage, said adjusting step comprising equalizing a variable input RPM with a variable output RPM of said system in said second stage to thus achieve a higher than a standard acceleration of the vehicle.

13. The method of claim 2, wherein said stages include a first stage and a second stage, said adjusting step comprising at least substantially equalizing in said second stage the RPM of the prime mover with variable RPM of the transmission to thus achieve a higher than a standard acceleration of the vehicle.

20. The method of claim 2, wherein said stages include a first stage and said adjusting step comprises selecting the variable RPM of the prime mover to at least approximate an idling RPM of the prime mover at a start of said first stage and to rise at least approximately to a desired RPM between said start and an end of said first stage.

21. The method of claim 2, wherein said adjusting step includes a planned increase of at least one of a variable input RPM of the system and the variable RPM of the prime mover in the power train of the vehicle.

22. The method of claim 2, wherein said stages include a first stage and a second stage and said adjusting step comprises developing the timely progress of at least one of a variable input RPM of said system and the variable RPM of the prime mover in the power train of the vehicle and, during said second stage, at least one of a variable input RPM of said system and a variable input RPM of a transmission in said power train in dependency upon a selected torque being transmissible by said system.

23. The method of claim 2, wherein said stages include a first stage and a second stage and said adjusting step comprises maintaining in said second stage at an at

least substantially constant value at least one of a variable input RPM of said system and the variable RPM of the prime mover in the power train of the vehicle, and conforming to said constant value at least one of a variable output RPM of said system and the variable input RPM of the transmission in said power train.

26. The method of claim 2, wherein said stages include first, second and third stages and said adjusting step comprises matching a variable input RPM and a variable output RPM of said system at a synchronizing instant during said third stage and increasing said input RPM in synchronism with said output RPM during said third stage subsequent to said instant.

32. The method of claim 2, wherein said stages include a first stage and a second stage, and further comprising the step of effecting a reduction of the variable RPM of the prime mover in said second stage in response to adjustment of the transmission of torque by said system until the completion of an at least substantial synchronization of the variable input RPM and a variable output RPM of the transmission in said power train.

37. The method of claim 2, further comprising the step of ascertaining or calculating at least one of (i) an energy input and (ii) the temperature of at least one portion of said system as a function of at least one of a plurality of signals denoting the variable RPM of the prime mover in the power train of the vehicle, a variable angle of a throttle valve of the vehicle, a variable pressure in a suction intake manifold of the vehicle, the variable input RPM of the transmission in said power train, branchings of auxiliary consumers in the vehicle, a tachometer generator of the vehicle, the position of an actuating member for a clutch of said system, a variable output RPM of said transmission, a variable output RPM of said system, a temperature sensor, the torque being applied to said system and the torque being transitted by said system.

38. The method of claim 2, wherein said stages include a first stage of acceleration of the vehicle, and further comprising the step of adaptively regulating a variable threshold value of the variable RPM of the prime mover in the power train of the vehicle prior to said first stage of acceleration.

39. The method of claim 2, wherein said stages include a first stage of acceleration of the vehicle, and further comprising the steps of adaptively regulating a variable threshold value of the variable RPM of the prime mover in the power train of the vehicle in dependency upon the desire of a driver of the vehicle regarding the acceleration of the vehicle so that said threshold value is at least reached prior to said first stage of acceleration of the vehicle.

42. The method of claim 2, wherein said adjusting step comprises adaptively ascertaining the position of an adjustable gas pedal of the vehicle and selecting an adaptively fixed threshold value for the variable RPM of the prime mover in the power train of the vehicle prior to initiation of a transmissible torque.

43. The method of claim 2, further comprising the step of adaptively selecting a maximum RPM of the variable RPM of the prime mover in the power train of the vehicle.

44. The method of claim 2, further comprising the step of selecting a maximum RPM of the variable RPM of the prime mover in the power train of the vehicle in dependency upon the desire of a driver of the vehicle regarding the acceleration of the vehicle.

45. The method of claim 2, further comprising the steps of adaptively ascertaining at least one of (i) the position and (ii) the dynamics of an adjustable gas pedal of the vehicle, and adaptively selecting a final value of the variable RPM of the prime mover in the power train of the vehicle.

48. A method of regulating the operation of an adjustable torque transmission system in a power train of a motor vehicle which is accelerable from zero speed, the power train further including a prime mover upstream and a variable-ratio transmission downstream of said system and the vehicle further having a device for adjusting said

system so as to vary the torque which is being transmitted by the system, a central signal processing and transmitting control unit for said device, and electronic units arranged to transmit to said control unit signals to enable the control unit to determine within at least one region of said system at least one of an energy input and a temperature, comprising the steps of

accelerating the vehicle from said zero speed; and

adjusting the transmission of torque by said system during acceleration of the vehicle from zero speed so that, at first, the transmissible torque at least approximates zero until a variable RPM of the prime mover at least reaches a threshold value, and that the vehicle undergoes a first acceleration at least when said prime mover RPM reaches said threshold value, with attendant variation of the transmissible torque to reduce the prime mover RPM, to achieve a more pronounced acceleration of the vehicle, and to reduce said energy input at least within a portion of said system.

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L5: Entry 40 of 49 File: USPT Feb 14, 1989

DOCUMENT-IDENTIFIER: US 4804059 A
TITLE: System for controlling a transfer clutch of a four-wheel drive vehicle

Abstract Text (1):
A four-wheel drive vehicle has a transmission, main drive wheels operatively connected to an output shaft of the transmission, auxiliary drive wheels, and a transfer clutch for transmitting output of the transmission to the auxiliary drive wheels. A control system is provided with a detector for detecting speed ratio of front-wheel speed and rear-wheel speed and for producing a speed ratio signal, which represents steering operation of the vehicle and for producing a steering angle signal. A control unit is responsive to the steering angle signal for controlling torque of the transfer clutch so as to cause the transfer clutch to slip in dependency on the steering angle signal.

Set Name side by side	**Query**	**Hit Count**	**Set Name** result set
	DB=USPT,PGPB,JPAB,EPAB,DWPI,TDBD; PLUR=YES; OP=ADJ		
L18	l16 not L17	35	L18
L17	L16 and l4	2	L17
L16	l1 near l2	37	L16
L15	L14 and l1	0	L15
L14	L13 same l2	5	L14
L13	l8 near l8	270	L13
L12	L11 not l10	19	L12
L11	L9 and l7	20	L11
L10	L9 and l7 and l4	1	L10
L9	L8 near l2	1935	L9
L8	driv$3 near wheel	109001	L8
L7	L6 same l1	1373	L7
L6	transmission near output	23610	L6
L5	L4 and l3	51	L5
L4	variable near (rpm or revolution or speed or velocity)	56006	L4
L3	l1 same l2	201	L3
L2	wheel near (rpm or revolution or speed or velocity)	26094	L2
L1	transmission near (rpm or revolution or speed or velocity)	31077	L1

END OF SEARCH HISTORY